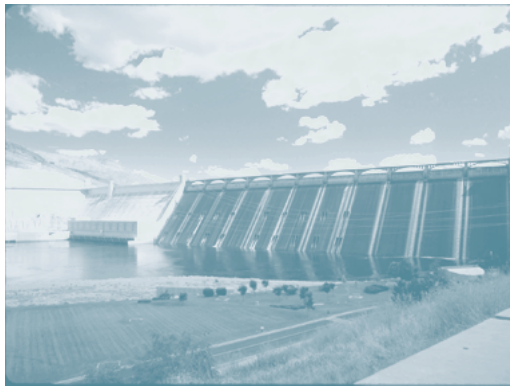
State of Washington

Planning a Geographic Information Infrastructure

A Strategy to Support Washington's Quality of Life

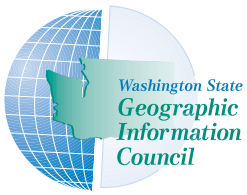


State of Washington

Planning a Geographic Information Infrastructure

A Strategy to Support Washington's Quality of Life

June 1999



1110 Jefferson Street SE
PO Box 42445
Olympia, Washington 98504-2445
360 902-3508
http://www.wa.gov/gic/

Preface

Today, Washington state faces major challenges with critical geographic dimensions.

To successfully meet these challenges, it is vital to implement a coherent, well-coordinated strategic application of geographic information technology. This document summarizes the results of a strategic planning activity sponsored by the Washington State Geographic Information Council. The plan reflects the critical thinking of key members of the state's geographic information community on how the technology can be used to address important quality of life issues.

A geographic information system (GIS) is a computer-based tool for mapping and analyzing the relationships between people, things and events. GIS technology integrates common computer capabilities such as query and statistical analysis with the unique visualization and geographic analysis benefits offered by maps. These abilities distinguish GIS from other information systems and make it valuable to a wide range of public and private enterprises for explaining events, predicting outcomes and planning strategies.

Early use of GIS technology emerged in Washington state government in the mid-1970s. The Department of Natural Resources was the first state agency to adopt GIS to help manage the state's forestland. Adoption by other governmental entities evolved over time. This was typically done on an independent basis and was driven by some emergent program or business need. In the late 1970s, a number of state and local GIS users began meeting informally to share information and discuss common issues, and in 1984, formed the Washington State Geographic Information Council to improve information sharing and coordination.

According to recent data, 31 counties, 15 state agencies, most major metropolitan and regional jurisdictions, and many tribes now employ GIS technology in Washington.

In 1998, the Council voted to sponsor a strategic planning activity that would focus on how geographic information could be improved statewide to address the critical issues faced by government. Thirty-six individuals from 24 government and private sector organizations participated in various aspects of the planning activity. This document captures the results of the critical thinking that went into that process.

The Vision

These organizations will use geographic information to improve services to their constituents and the citizens in the state of Washington. Geographic analysis of complex relationships between human activities and the natural environment will lead to better decisions which ultimately improve the environment and our quality of life.

The vision for a statewide infrastructure of geographic information will be accomplished through the achievement of four goals.

1. Improve the effectiveness of public services through the use of innovative partnerships to develop and use geographic information.

2. Maintain Washington's quality of life by using geographic information to support human resource services, economic development, transportation infrastructure, housing and facilities.

3. Preserve the diversity of our natural heritage by improving the availability of natural resource data and more effectively using geographic information to manage our natural resources.

4. Promote increased awareness of geography and how our actions shape the developed and natural environments.

The Public Policy Challenge

The citizens of Washington face the complex problem of sustaining a quality of life that depends on limited natural resources.

Human activity, growth and the use of natural resources have compromised species preservation, the natural landscape and recreational experiences. Elected officials, citizens and business leaders must set a course of action to address complex interrelated problems. These include problems associated with salmon recovery, growth management, transportation, economic development, public health, local government services and water resource management.

A statewide infrastructure of geographic information is essential for effective resolution of many state and local policy issues. Setting goals, developing geographic information policy and initiating action plans stem from the following issues.

- **Local and state government organizations can greatly improve effectiveness through the increased use of publicly accessible and standardized geographic information.** Computer networks can be used to link the concerns of specialized disciplines and promote shared information across public agencies with common needs.
- **Effective growth management policies and programs rely on information that is integrated from many jurisdictions.** Program managers are beginning to understand which natural, economic and human behavior factors affect growth patterns. The dynamic relationships between these factors could be evaluated with GIS if data were improved and made more accessible.
- **Economically and environmentally healthy communities need to access current information about local infrastructure, resources and constraints that can help them recruit suitable employers.** They must be able to help and guide those employers to locate their operations and invest in business sites that make sense for the community.
- **Understanding the complex systems that affect threatened and endangered species and their habitats requires high-quality geographic information.** The long-term viability of ecosystems for salmon and other species must be assured. Natural species communities span city, county and state boundaries. GIS must be used to bridge jurisdictions and organizations in the development of recovery and response plans.

The Public Policy Challenge

◆ **Preservation and thoughtful use of water resources are key to addressing growth management and salmon recovery.** Drinking water supplies must be identified and protected. The water quality and quantity of our streams and lakes, and legal rights and protections associated with each water resource must be balanced.

◆ **Washington citizens and policy-makers need to understand how the transportation infrastructure influences growth, and how to maximize the efficiency of public transportation.** Maintenance and transportation system improvements represent some of the greatest operating costs for our communities. Effective transportation planning is a complex process that relies heavily on high-quality geographic data and tools.

The Geographic Information Challenge

While meeting many needs on a local and individual program basis, the strategic, integrated use of the technology is falling short of its potential.

Geographic information producers in Washington have worked with federal agencies, neighboring states, counties and cities to define and adopt emerging national GIS standards and best practices.

Through the Washington State Geographic Information Council and Framework data development efforts, Washington has made progress toward statewide standards and practices relating to property ownership and the public land survey, and has created partnerships for data development and support through a central clearinghouse and information distribution center. County and city governments have partnered to use GIS for the support of crime prevention, emergency dispatch (E911), economic development, zoning, permit tracking, planning and more.

While meeting many needs on a local and individual program basis, the strategic, integrated use of the technology is falling short of its potential.

The success of this plan depends on the availability of specific information resources for addressing key public policy issues. Washington governments, citizens and businesses need to design, develop and implement GIS solutions that respond to the following geographic information challenges.

- **A variety of organizations and programs that could use and share the same data are adopting GIS technology.** Presenting and addressing data needs in a coordinated way would provide significant public benefits and cost savings. This would require more robust and widely embraced technical standards and procedures.
- **Organizations lack a common data foundation to address key statewide policy issues.** If the Framework efforts in Washington state could be accelerated, organizations could begin to build their data infrastructures upon this common foundation.

The Geographic Information Challenge

It is necessary to expand the initial Framework data development efforts to address all the fundamental data themes.

- **It is difficult to assure a strategic deployment and use of GIS across Washington.** Current institutional models do not lend themselves to creating lasting partnerships, standardized data and a coordinated GIS infrastructure. New leadership roles for meeting these operational needs must be established.

- **Different organizations using GIS are often faced with the need to solve the same technical problems. They also need efficient ways to formally share information about their needs and planned activities.** Numerous steps could be taken to improve communication and education among various user communities.

- **Washington GIS users need an expanded technology foundation to improve information access.** Easy discovery and access to existing geographic information is necessary to address important business and policy issues.

Strategic Objectives and Priority Actions

The strategic objectives lead to the successful use of geographic information to resolve public policy issues. Each strategic objective is addressed through specific action items. The plan identifies four strategic objectives with associated actions.

Objective 1

- Produce multi-use geographic data through partnership efforts between government and private organizations.

Priority Actions

- Complete a digital Framework for Washington including the cadastral (property ownership), hydrography (surface waters), transportation, ortho-imagery (corrected aerial photographs), and topography (elevation) data sets.
- Develop the requirements and data design for a land use / land cover Framework data set, and identify possible funding mechanisms.
- Identify management strategies and funding for Framework data development, maintenance and distribution.
- Identify data requirements, in addition to Framework, for salmon recovery, growth management, buildable lands and public lands inventory.

Objective 2

- Develop standards, guidelines and procedures for sharing geographic information among organizations.

Priority Actions

- Utilize existing national standards where appropriate.
- Create data dissemination and coordination guidelines.
- Develop guidelines for using Framework data as a base for adding new information which addresses: technical specifications, data stewardship and distribution policy.
- Update GIS metadata standards (descriptions of GIS data) and continue to enhance the information content of the Washington State GIS Information Clearinghouse.

Strategic Objectives and Priority Actions

Objective 3

- Ensure GIS awareness across a range of public policy and decision-making arenas.
  Create a process to strengthen GIS leadership and coordination in Washington.

Priority Actions

- Consider legislation or a Governor's executive order that recognizes the role of the Geographic Information Council when developing this process.
- Develop a standardized data sharing agreement in consultation with the Attorney General's office.

Objective 4

- Foster the exchange of information, knowledge and skills within the GIS community, and reach out to public schools, citizens, businesses and government.

Priority Actions

- Support and expand the Geographic Information Council website to respond to the needs of the GIS community, including:
  1. Contact list for GIS topics of interest, hardware and software resources, and agency resources.
  2. FTP site services for data exchange.
  3. Mission statements of workgroups.
  4. GIS activities and products of interest.

What's Next?

Upon adoption of the strategic plan, an evaluation of each proposed action and a cost for implementation will be developed.

The Washington State Geographic Information Council is instrumental in promoting information sharing and developing a strategic direction. Action on earlier strategic priorities was limited due to Council staff limitations and the lack of wider coordinated planning efforts. Upon adoption of the strategic plan, an evaluation of each proposed action and a cost for implementation will be developed. Some of the action items in the plan are currently being addressed through various projects, the Framework Management Group and the Washington State Geographic Information Council. A next priority step is to acquire staff resources to fully implement the plan.

Conclusion

GIS community and public policy leaders are urged to implement this strategic plan.

The vision, goals and objectives of the strategy articulated here are intended as an invitation for every public agency, business and tribe to improve Washington's geographic information services. There is no question that public policy, resource management and human services benefit from this important technology.

Geographic information will be created by partnerships and more openly shared between organizations to improve policy decisions. We will develop a better understanding of our actions within sensitive ecosystems. GIS will help us see the big picture and understand the complex relationships between public policy, growth and the transportation infrastructure. Effective policy development and resource management practices will allow our limited funds to go further and produce greater returns.

The challenge is to elevate this technology to a new level that helps us transcend organizational barriers and together answer highly complex policy and resource management questions. GIS community and public policy leaders are urged to implement this strategic plan.

Planning Participants

The planning process provided a number of opportunities to shape the process and provide input. The following list offers a broad if not precise picture of the depth and range of participation.

Planning Committee

City of Seattle, Seattle Public Utilities,
Tom Nolan,
Geographic Information Systems Manager

Spokane County,
Ian Von Essen,
Geographic Information Systems Manager

Thurston Regional Planning Council,
David Read,
Associate Planner /Senior Geographic Information Systems Analyst*

Interagency Committee for Outdoor Recreation,
Karl Herzog,
Public Lands Inventory Project Manager
Kitty Weisman,
Geographic Information Systems Coordinator

Washington State:
Department of Community,
Trade and Economic Development,
Shane Hope,
Growth Management, Managing Director

Department of Fish and Wildlife,
Jim Eby,
Wildlife Resource Data Systems Manager *

Department of Information Services,
Jeff Holm,
Washington State Geographic Information Council Coordinator*

Department of Natural Resources,
Larry Sugarbaker,
Geographic Information Systems Manager
Washington State Geographic Information Council Chair*
Carrie Wolfe,
Washington Framework Coordinator

Westcott & Associates,
Bruce Westcott,
Project Consultant*

*Core Team

October '98 kick-off workshop participants

Benton County Public Works,
Chris Wright,
Geographic Information Systems Project Coordinator

City of Everett, Department of Public Works,
Edward Fairbanks,
Geographic Information Systems Programmer / Analyst

City of Seattle, Seattle Public Utilities,
Tom Nolan,
Geographic Information Systems Manager
Tom Van Buren,
Watershed Management Division
Geographic Information Systems Analyst

ESRI, Inc.,
Martin Balikov,
Regional Manager

Hanford Mapping Services,
Steven Rush,
Mapping Systems Analyst

King County,
Greg Babinski,
Geographic Information Systems Manager

Puget Sound Regional Council,
Nancy Tosta,
Forecasting and Growth Strategy Director
Greg Cioc,
Data Development Manager

Snohomish County,
Don Eginton,
Geographic Information Systems Manager

Snohomish County Public Utility District #1,
David Wilson,
Automation Services Manager

Planning Participants

Thurston Regional Planning Council,
David Read,
Associate Planner /Senior Geographic Information Systems Analyst

University of Washington Libraries,
Jennifer Stone,
Geographic Information Systems Librarian, Map Collection, Suzzallo Library

U.S. Geological Survey,
Gene Thorley,
External Affairs Senior Advisor
Frank Voss,
Hydrologist

Washington State:
Department of Community, Trade and Economic Development,
Shane Hope,
Growth Management, Managing Director

Department of Ecology,
Joy Denkers,
Geographic Information Systems Services Manager
Lynn Singleton,
Information Integration Manager

Department of Fish and Wildlife,
Jim Eby,
Wildlife Resource Data Systems Manager
Karen Terwilleger,
Salmon Recovery, Special Assistant

Department of Health,
David Jennings,
Source Water Protection Program Manager
Glen Patrick,
Geographic Information Systems Development Coordinator

Department of Information Services,
Jeff Holm,
Washington State Geographic Information Council Coordinator
Carol Pendleton,
Washington State Geographic Information Council Administrative Support
Paul Taylor,
Management and Oversight of Strategic Technologies, Deputy Director

Interagency Committee for Outdoor Recreation,
Karl Herzog,
Public Lands Inventory Project Manager

Department of Natural Resources,
David Steele,
Survey Manager
Larry Sugarbaker,
Geographic Information Systems Manager, Washington State Geographic Information Council Chair
Carrie Wolfe,
Washington Framework Coordinator

Department of Transportation,
George Spencer,
Geographic Information Systems Manager

Others providing comments

Sun Microsystems,
David Buckland,
Account Representative

Washington State Department of Community, Trade and Economic Development,
Harvey McQueen,
Planner

Washington State
Geographic Information Council
is supported by the

Washington State Department of
Information Services
Management and Oversight of Strategic Technologies
1110 Jefferson Street SE
PO Box 42445
Olympia, Washington 98504-2445

Phone: 360 902-3508
Internet address: http://www.wa.gov/dis

Photography

Randy Warnock,
Washington State Department of Natural Resources
Grand Coulee Dam
Forest and Hikers
Wetland
Logger

Doug Milward,
Washington State Department of Fish and Wildlife
Commercial Fishing in Puget Sound

Washington State Department of Transportation
I-5 Traffic

This document is available in alternate format
through the DIS Human Resources Office at
1110 SE Jefferson Street,
PO Box 42445,
Olympia, WA 98504-2445,
or call 360-902-3543, TTY/TDD 1-800-833-6388.